CASE STUDY:

Lymphedema Treatment And Type 2 Diabetes:
A New Awareness

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One of the unique aspects of lymphedema treatment in the home care setting is the longitudinal and comprehensive nature of patient observation by a single clinician in the patient’s home. This allows for a global analysis of Complete Decongestive Therapy (CDT) and its impact systemically in the patient’s home environment versus a clinical setting. The combination of treating a patient in their familiar environment with comprehensive medical management allows the home care therapist a unique awareness and understanding of patient response to lymphedema treatment. This retrospective case review follows a patient who demonstrated decreased glucose levels to a more normal range after treatment with CDT. This is not an isolated incident and has been noted in additional patients in our home care services.

A 59 year-old lady with stage II lymphedema of the lower extremities was referred to home care for CDT. This patient was classified as homebound due to chronic back and leg pain limiting tolerance for ambulation, and recurrent cellulitis of her lower extremities. She had a complex medical/surgical history including: type 2 diabetes for 19 years treated with nutrition, oral hypoglycemic agents and insulin injections twice daily and stage II lymphedema.

She was diagnosed with lymphedema in 2003. At that time, her legs began to swell and her weight increased. She attempted to treat the edema with elevation, but this was unsuccessful. The patient was unable to walk due to the increasing edema and was admitted to the hospital for evaluation and treatment. She was then transferred to a skilled nursing facility for ongoing care. At this time, the patient was diagnosed with bilateral lower extremity LE and CDT was initiated. As the LE reduced, she was able to walk short distances, allowing her to return home. It was at this time the patient was referred to home care services for nursing and LE treatment.

Over the course of four months, this patient was treated by a certified lymphedema/occupational therapist in the home setting and was instructed in skin care, manual lymph drainage (MLD), home exercise and compression therapy. She reported compliance with the home program emphasizing self-MLD and was able to perform her home program independently. She had progressive and significant decrease in her lower extremity LE.

Throughout the course of treatment, the patient consistently monitored and documented her blood glucose levels daily and began questioning the therapist as to why her glucose levels were now consistently closer to the normal range (70-100 mg/dl). Prior to the initiation of LE therapy, the patient’s reported blood glucose levels ranged from 175 mg/dl to 300 mg/dl for two years. However, during the four-month course of treatment, the patient’s average daily fasting morning glucose was 131mg/dl and 112mg/dl at bedtime, a significant decrease when compared with pre-CDT treatment levels. The patient discontinued her evening insulin if her blood glucose was <100 mg/dl and adjusted further her insulin therapy to maintain normal glucose without hypoglycemia per her physician’s orders. A1C levels which measure the average amount of glucose in the blood over a three month period of time, prior to CDT had been 8.6%. Five months following CDT, the measured A1C was 6.7%. The recommended A1C goal for people with type 2 diabetes is 6.5% or less according to the American Association of Clinical Endocrinologists.
Throughout the course of treatment, no new diagnoses, changes in medication, diet, weight, lifestyle or activity level were reported.

During the four-month course of home care, this patient received LE treatment ranging from one to three times per week, with frequency decreasing as the patient became more independent with self-management. The longevity of the treatment course was associated with designing a treatment program based on the patient’s tolerance for activity. Multiple disciplines were involved in this home care episode including physical therapy, occupational therapy and nursing. In addition, numerous doctors’ appointments, and management of chronic co-morbidities interfered with five day per week service delivery of CDT. It is important to note that this patient was not able to tolerate an intense five day per week outpatient treatment program, however was able to actively participate in a less intensive, longitudinal program. Without the intervention of home care, this patient would have been transferred to a skilled facility and/or gone without lymphedema treatment. It is the longitudinal nature of home care that allowed the therapist and patient time to observe blood glucose level changes during the course of CDT.

**Discussion**

This case may suggest a role for CDT in lowering blood glucose levels. It is important to note that the patient had a lower A1C following LE therapy even as she was able to lower her diabetes medications. Subsequent LE patients in our experience have reported similar results. Review of the literature has not demonstrated previous reports of this finding. It is important that clinicians are aware of this potential improvement in glucose levels so that appropriate changes can be made to the patient’s treatment plan. It also is important for therapists and patients to be aware of this observation so that blood glucose levels can be appropriately monitored during the course of LE therapy.

We suggest potential factors that might influence glucose levels during CDT, which include but are not limited to the following:

1. The effect of superficial and deep abdominal techniques of MLD on viscera to decrease inflammatory cytokines and thereby decrease insulin resistance.³
2. Effects on the sympathetic nervous system, which increases lymphatic pumping and decreases interstitial fluid. MLD results in decreased edema when used as a component of CDT. The resultant decrease in edema decreases diffusion distances⁴ with improvement of insulin absorption and glucose homeostasis.
3. Overall decrease in sympathetic tone secondary to increased relaxation due to the “soothing effect” of MLD with the promotion of parasympathetic activity effecting glucose lowering.⁵

The observation that treatment of LE with CDT lowers blood glucose levels in patients with type 2 diabetes warrants further investigation. If these findings are reproducible in larger populations, physicians, therapists and other healthcare professionals need to be informed in order to prevent hypoglycemia, avoid potential hospitalization and ensure patient safety.

**REFERENCES**

5 Mary Kathleen Rose. (February/March 2001). Diabetes: Massage as an Adjunct Treatment. *Massage & Bodyworks.*

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